REMARKS

This is a full and timely response to the non-final Office Action mailed March 24, 2005. Reexamination and reconsideration in light of the foregoing amendments and following remarks is respectfully solicited.

Claims 1-17, and 19-27 remain pending in the application, with claims 1, 7, 11, 16, and 23 being the independent claims. Claims 1, 7, 11, 12, 16, and 23 have been amended herein, and claim 18 has been cancelled without prejudice. No new matter is added by the amendments.

Rejection under 35 U.S.C. §102(b)

At page 2 of this Office Action, claims 1-4, 16-19, and 23 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,862,160 to Irvin et al., hereinafter Irvin. Applicants submit that claims 1-7, 17-19, and 23 are not anticipated by Irvin because Irvin does not disclose all of the features of Applicants 'claimed invention.

Amended independent claim 1 recites "masking each of the plurality of data packets to which the error detection codes have been applied with a corresponding one of a plurality of ordering masks, the plurality of ordering masks having a known order, the masking being performed in the known order." Amended independent claims 16 and 23 recite "a mask store comprising a plurality of masks having a known order, said known order representing an order of transmission of a plurality of packets".

Irvin discloses using a specified data mask that is exclusively ORed with a data stream prior to transmission. The specified data mask represents a specified data input pattern. At the transmitting end, an error protection encoder includes a store within a mask selector for storing at least one mask. Each mask represents a specified signal, event, or message which is to be conveyed at select times by a secondary channel. At the receiving end, at least one specified mask is exclusively ORed with the received data stream, and calculated parity bits are compared with

received parity bits to subsequently reconstruct the data in the original data stream. The receiving system also contains a list of masks that are the same as the list of mask in the transmitting system. If the received parity bits agree with the computed parity bits, the receiving system concludes that the input data frame has been recreated. The receiving system can determine the input data bit pattern because the mask, by definition, represents a specified signal data bit pattern. See Col. 3, lines 38-62.

Although Irvin discloses using specified data masks, Irvin does not disclose or suggest masking each of the data packets with a corresponding mask from a plurality of masks and in the order of the plurality of masks as set forth in amended independent claim 1. In fact, Irvin does not disclose or suggest any ordering of the specified data masks. At best, Irvin discloses "[a] mask pattern is selected which, when typical transmission errors occur, does not substantially increase the likelihood reduces the likelihood of having an error go undetected", and generally, this selection occurs through an iterative trial and error process. See Col. 6, lines 1-18. By definition, iterative processes involve repetition but do not address order or sequence. Irvin is not concerned with a plurality of masks having a known order nor with applying such masks to the data packets in the known order.

Although Irvin discloses a store for storing at least one mask, Irvin does not disclose or suggest a mask store comprising a plurality of masks having a known order as set forth in amended independent claims 16 and 23. As previously mentioned with regard to amended independent claim 1, Irvin is not concerned with any ordering of the masks. Irvin is primarily concerned with providing possible data states using the masks (see Col. 7, lines 17-23). During decoding, Irvin uses a trial and error method to select different masks until a "pass" signal is achieved (see Col. 8, line 53 through Col. 9, line 8). Irvin doesn't even mention sequentially selecting different masks, which would imply some sort of order, during this trial and error method. Clearly, Irvin is not concerned with any ordering of the masks nor with this ordering representing an order of transmission of a plurality of packets.

Because of the foregoing differences between amended independent claims 1, 16, and 23 and Irvin, Applicants submit that claims 1, 16, and 23 are patentably distinguished from Irvin. Because claims 2-4, 17, and 19 depend from one of claims 1 and 16, or an intermediate claim depending therefrom, Applicants submit that claims 2-4, 17, and 19 are equally patentably distinguished from Irvin.

At page 5 of this Office Action, claims 1-6, 16-19, and 23-26 are rejected under 35 U.S.C. §102(b) as being anticipated by Hosford et al. (U.S. Patent No. 5,996,450), hereinafter Hosford. Applicants submit that claims 1-6, 16-19, and 23-26 are not anticipated by Hosford because Hosford does not disclose all of the features of Applicants' claimed invention.

Hosford discloses a mask for encrypting frames of data such as transmitted in wireless cellular communication. The mask differs for each respective frame and is based on a variable value to produce a variable mask. Using the variable value, a pseudo random number is generated and formed into the variable mask. The variable value may be a frame counter that is incremented upon receipt of a frame. Each data frame is combined with a different variable mask to produce encrypted frames. In one example, Hosford discloses that the initial value of the frame counter is the most significant bits of a pre-generated fixed voice privacy mask (FVPM) independently generated at either the transmission end or the receiving end.

Although Hosford discloses that the variable mask is derived from a variable value that may be based on a frame counter, Hosford does not disclose or suggest a plurality of masks having a known order. Hosford teaches to the contrary of any ordering of masks when disclosing that "frames of data are encrypted by obtaining a variable value which is aperiodically reset to a new initial value, the new initial value being a substantially random number with respect to a previous initial value" (see Col. 1, lines 63-67). Hosford implies some sort of order in the context of the frame counter that is merely for the convenience of providing a starting point to generate the pseudo random number which is then used to form the variable mask (see Col. 2, lines 3-8). Any possible ordering of masks is destroyed upon resetting the initial value.

The Office Action asserts that Hosford discloses a mask store. Applicants submit that Hosford does not specifically mention any storage mechanism for the generated variable masks. At best Hosford discloses that the initial value of the frame counter is stored. In contrast with the claimed invention, Hosford discloses that a station generates a variable mask based on an initial value. This variable mask is hypothetically temporarily stored, although not specifically mentioned in Hosford, for combining with a data frame. However, Hosford clearly does not disclose or suggest a mask store for a plurality of masks having a known order as recited in amended independent claims 16 and 23. Further evidencing Hosford's different approach to masking, Applicants submit that Hosford sets forth a masking system that is based on a synchronization of a frame counter reset of the transmitting station and the frame counter reset of the receiving station (see Col. 3, line 55 through Col. 4, line 4). By focusing on synchronization of frame counter resets, Hosford has no need for storing masks.

Because of the foregoing differences between claims 1, 16, and 23 and Hosford, Applicants submit that claims 1, 16, and 23 are patentably distinguished from Hosford. Because claims 2-6, 17-19, and 23-26 depend from one of claims 1, 16, and 23, or an intermediate claim depending therefrom, Applicants submit that claims 2-6, 17-19, and 22-26 are equally patentably distinguished from Hosford.

Rejections under 35 U.S.C. §103

At page 7 of this Office Action, claims 5 and 27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hosford in view of Weiss (U.S. Patent No. 4,754,482). Because of the foregoing discussion regarding the differences between the claims 1 and 23 and Hosford and because claims 5 and 27 depend from claims 1 and 23, respectively, Applicants submit that claims 5 and 27 are not obviated by Hosford in view of Weiss because neither Hosford and Weiss, either alone or in combination, disclose all of the features of Applicants' claimed invention.

Applicants further submit that a prima facie case of obviousness has not been established. To establish a prima facie case of obviousness under 35 U.S.C. §103, three requirements must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. 2143. The following discussion explains that a prima facie case of obviousness has not been established.

Applicant submits that there is no motivation to combine Weiss with Hosford. Weiss discloses a synchronizing encryption and decryption system where a cyclic redundancy code (CRC) is generated for each data block using both encrypted data for such data block and a sequence number appended to the encrypted data. The sequence number is derived from a local counter that is synchronized to a counter at a transmitting or storing apparatus. While Weiss and Hosford are both distantly related to encryption of data, Weiss makes no mention of masks in contrast with Hosford that discloses privacy masks. Instead, Weiss makes reference to using the sequence number in generating the CRC. The CRC "is a multi-bit code that is generated by circuit 308 after all data bits have been passed to the CRC circuit" (see Weiss, Col. 10, lines 48-53) which is completely different from the privacy masks disclosed by Hosford.

Applicants submit that there is no reasonable expectation of success in combining Weiss with Hosford because each teaches a different encryption method based on different encryption tools. Weiss discloses using a CRC based on encrypted data and a corresponding sequence number for each data block, whereas Hosford discloses using privacy masks, generated using a standard algorithm, in combination with a variable value. A hypothetical combination of Weiss with Hosford, using both CRC and privacy masks, produces an inefficient encryption method which is contrary to the objects of both Weiss and Hosford.

Finally, Applicants submit that even if Weiss were to be combinable with Hosford, the resulting combination does not teach all of the features of Applicants' claimed invention. Neither Hosford nor Weiss, either alone or in combination disclose "masking each of the plurality of data packets to which the error detection codes have been applied [emphasis added]" as recited in amended claim 1, from which claim 5 depends, nor a "masking device coupled to the mask store and the forward error device and responsive thereto to mask each of the formatted packets to which the error codes have been applied [emphasis added]" as recited in claim 23, from which claim 27 depends. Neither Hosford nor Weiss recognize the difference between masking and error detection coding, namely applying error detection codes to data prior to masking as in Applicants' claimed invention.

At page 8 of this Office Action, claims 7-10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Weiss in view of Hosford in view of Gross et al. (U.S. Patent No. 5,761,431), hereinafter Gross. From the preceeding discussion, Applicant submits that claims 7-10 are patentable over Weiss in view of Hosford in view of Gross because a prima facie case of obviousness has not been established with respect to claims 7-10.

Additionally, Applicant submits that Weiss, Hosford, and Gross, either alone or in combination, do not teach "applying at least one ordering mask to the received packet in a known order from a list of ordering masks to find a current ordering mask that was previously used to mask the received packet, the list of ordering masks having the known order" as recited in amended independent claim 7. None of Weiss, Hosford, and Gross mention a list of ordering masks. As previously mentioned in the foregoing discussion regarding Hosford, Hosford does not mention any mechanism for storing a list of ordering masks, and thus does not disclose applying an ordering mask from a list of ordering masks, and is not concerned with storing masks, nor with generating a list of ordering masks, because Hosford focuses on synchronizing frame counter resets for masking/unmasking at the transmitting station and the receiving station, respectively. Weiss is not concerned with ordering masks but instead focuses on error detection codes.

At page 9 of this Office Action, claims 11-12 and 14-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Weiss in view of Dent et al. (U.S. Patent No. 5,353,352), hereinafter Dent. Applicant submits that amended claims 11-12 and 14 and claim 15 are patentable over Weiss in view of Dent because neither Weiss or Dent disclose all of the steps of amended independent claim 11.

Amended independent claim 11 recites a step of "setting a temporary ordering mask equal to a next ordering mask in a list of ordering masks, the list of ordering masks having a known order indicating an order of packet transmission".

Dent discloses using a different binary mask, or scrambling mask, to scramble each block-coded information signal. The same scrambling mask is used at the receiver to descramble the information signal from a composite signal. The scrambling masks are ordered based on the signal strength of a respectively assigned coded information signal and are selected to minimize errors due to interference from overlapping signals, such as based on auto- and cross-correlation properties (see Col. 3, lines 7-13). However, the scrambling masks disclosed by Dent do not have an order that indicates an order of packet transmission as recited in amended independent claim 11.

Applicant submits that neither Weiss or Dent mention the step of "setting a temporary ordering mask equal to a next ordering mask in a list of ordering masks" as recited in amended claim 11. Weiss discloses appending to each data block an error detection code which is calculated from the encrypted data block and a sequence number generated by a local counter. The sequence number is appended to the data but not actually transmitted or stored with the encrypted data and error correction code (see Col. 5, lines 9-17) and as such does not establish any order of masks. At the receiving end, Weiss only discloses appending to each received data block a sequence number derived from a local counter and calculating a new error detection code for comparison with the received error detection code. Weiss is silent regarding ordering masks, and Dent mentions scrambling masks in the context of signal strength, but neither reference discloses the aforementioned step.

Further, Applicants submit that a prima facie case of obviousness has not been established because there is no motivation to combine Weiss with Dent. First, Weiss is not concerned with scrambling masks as disclosed by Dent. Second, Dent discloses application of scrambling masks during decoding based on ordered signal strength (see Dent, Col. 3, lines 11-15 and Col. 15, lines 29-43). At best, Weiss is directed to comparing a computed block error detection code with a received copy of an error detection code (see Weiss, Col. 6, lines 29-39 and Col. 11, lines 45-57). Any hypothetical combination of Weiss with Dent results in an inefficient or non-optimal coding technique because of the use of both CRC and scrambling masks.

Because of there is no motivation to combine Weiss with Dent and because Weiss with Dent do not disclose all of the features of amended claim 11, Applicants submit that amended claim 11 is not obviated by Weiss in view of Dent. Because of the foregoing discussion regarding the patentability of amended claim 11 and because amended claims 12 and 14 and claim 15 depend from amended claim 11 or an intermediate claim depending therefrom, Applicants submit that amended claims 12 and 14 and claim 15 are likewise not obviated by Weiss in view of Dent.

At page 11 of this Office Action, claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Weiss and Dent as applied to claim 11 and in further view of Gross. From the preceeding discussion, Applicants submit that amended claim 13 is patentable over Weiss in view of Dent and further in view of Gross because the cited references do not disclose all of the features of amended claim 11 and because a prima facie case of obviousness has not been established with respect to amended claim 11.

At page 11 of this Office Action, claims 20-21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hosford in view of Dent. From the foregoing discussion regarding the patentability of amended independent claim 16, Applicants submit that claims 20-21 are patentable over Hosford in view of Dent because the cited references do not disclose all of the features of the claimed invention.

Additionally, Applicants submit that a prima facie case of obviousness has not been established with respect to claims 20-21 because there is no motivation to

combine Hosford with Dent. As previously mentioned, Dent discloses application of scrambling masks during decoding based on ordered signal strength of a respectively assigned coded information signal (see Dent, Col. 3, lines 11-15 and Col. 15, lines 29-43). In contrast, Hosford is directed to frame counter based decryption by combining a variable mask generated from a frame counter with an encrypted data frame (see Weiss, Col. 6, lines 29-39 and Col. 11, lines 45-57). Applicants submit that Hosford teaches away from Dent because each reference is directed to an entirely different method of encryption/decryption.

At page 12 of this Office Action, claim 22 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hosford. From the foregoing discussion regarding the patentability of amended independent claim 16 and because claim 22 depends from amended claim 16, Applicant submit that claim 22 is patentable over Hosford because Hosford does not disclose all of the features of amended claim 16.

In view of the foregoing, Applicants respectfully submit that rejection of claims 5, 7-15, and 20-22 under 35 U.S.C. §103(a) has been overcome and requests withdrawal of the same.

Conclusion

In view of Applicants' amendments and remarks, it is respectfully submitted that the rejections under 35 U.S.C. §§102 and 103 have been overcome. Accordingly, Applicants respectfully submit that the application, as amended, is now in condition for allowance, and such allowance is therefore earnestly requested. Should the Examiner have any questions or wish to further discuss this application, Applicants request that the Examiner contact the Applicants' attorneys at 480-385-5060.

If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for any extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

Dated: June 24, 2005

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